

REMARKS

Applicants respectfully request consideration of the subject application as amended herein. This Amendment is submitted in response to the Office Action mailed July 31, 2007. Claims 1-22 stand rejected. In this Amendment, claims 1-22 have been canceled without prejudice. Claims 23 – 47 have been added. No new matter has been added.

35 U.S.C. §112

The Examiner has rejected claims 3, 4, 14 and 15 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 3, 4, 14 and 15 have been canceled without prejudice. Hence, the rejections under 35 U.S.C. § 112 are moot.

35 U.S.C. §103

Claims 1, 3, 12 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Arnou, (“:-) When you grade that: using e-mail and the network in programming courses,” hereinafter “Arnou”), in view of Worthington, (“Strings,” hereinafter “Worthington”). Claims 2, 4-8, 11, 13, 15-19 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Arnou in view of Worthington, as applied to claim 1 above, and further in view of Clough, (“Plagiarism in natural and programming languages; an overview of current tools and technologies,” hereinafter “Clough”). Claims 9 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Arnou in view of Worthington, as applied to claim 1 above, and further in view of Wegmann, (“TLA + Mode – Editing Features,” hereinafter “Wegmann”). Claims 10 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Arnou in view of Worthington in view of Wegmann, applied to claim 9 above, and further in view of Clough.

Claims 1-22 have been canceled. Hence, the rejections under 35 U.S.C. §103(a) are moot.

With respect to new claim 23, Arnow does not teach or suggest at least comparing program elements from a first array with program elements from a second array, where the comparison is performed between **individual** program elements **regardless of the order of code lines** containing the program elements in the first array and the second array **during the comparison**. Much less does Arnow teach or suggest presenting to a user an indication of plagiarism with respect to a first program source code file and/or a second program source file, where the indication of plagiarism is defined by a **larger number** of program elements resulting from the comparison.

Arnow discloses comparing program elements sorted by line length using the diff utility in Unix. Contrary to the presently claimed invention, the diff utility performs the comparison based on the order of code lines that exists during the comparison. In the presently claimed invention, in contrast, the comparison is performed regardless of the order of code lines that exist during the comparison. In addition, in Arnow, plagiarism is indicated when the number of lines resulting from the comparison is small, as opposed to the presently claimed invention, in which the indication of plagiarism is defined by a larger number of program elements resulting from the comparison. Appendix A attached herein illustrates the operation of the diff utility used in Arnow to better illustrate the differences between Arnow and the features of the presently claimed invention.

The features of the present invention, which are missing from Arnow, are included in the following language of claim 23:

... comparing the program elements from the first array with the program elements from the second array, the comparison being performed between individual program elements regardless of an order of code lines containing the program elements

in the first array and the second array during the comparison; and
presenting to a user an indication of plagiarism with respect to at least one of the first program source code file and the second program source file, wherein the indication of plagiarism is defined by a larger number of program elements resulting from the comparison.

Similar language is also included in claims 33 and 41. Thus, the present invention as claimed in claims 23, 33 and 41, and their corresponding dependent claims, is patentable over Arnow.

With respect to the other cited references, each of Worthington, Clough and Wegmann lacks the same limitations that are missing from Arnow. Accordingly, the cited references, taken alone or in combination, do not teach or suggest the present invention as claimed in claims 23, 33 and 41 and their corresponding dependent claims. Applicant respectfully requests the withdrawal of the rejection under 35 U.S.C. §§103(a), and submits that the pending claims are in condition for allowance.

DEPOSIT ACCOUNT AUTHORIZATION

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicant hereby requests such extension.

If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact Marina Portnova at (408) 720-8300.

Respectfully submitted,

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Appendix A

Example 1		
Array 1	Array 2	Diff 1_2
a	b	1d0
b	a	< a
aa	bb	2a2,3
bb	aa	> a
aaa	ddd	> bb
bbb	ccc	3a5,6
ccc	bb	> ddd
ddd	aaa	> ccc
xxxx	yyyy	6,9d8
yyyy	xxxx	< bbb
		< ccc
		< ddd
		< xxxx
		10a10
		> xxxx

Example 1 above shows Arrays 1 and 2, representing program elements from two source code files, that have the same lines sorted by line length but with lines of equal length sorted differently. Arrays 1 and 2 were compared using the diff utility referenced in Arnow. Diff 1_2 shows the result of the comparison with 5 non-matching lines in each array, as illustrated with indicators ">" and "<". The diff utility found these differences because it performed the comparison based on the current order of lines in the arrays, rather than a line-by-line comparison irrespective of the order of lines. Example 1 illustrates that the diff utility fails to identify plagiarism in arrays that have the same lines but a different order of lines, i.e., the problem addressed by the present invention.

Example 2		
Array 1	Array 3	Diff 1_3
a	a	1a2,3
b	a	> a
aa	a	> a
bb	b	2a5,16
aaa	b	> b
bbb	c	> c
ccc	c	> c
ddd	c	> c
xxxx	c	> c
yyyy	c	> c
	c	> c
	c	> c
	d	> d
	d	> d
	e	> e
	f	> f
	aa	4a19,22
	bb	> cc
	cc	> dd
	dd	> ee
	ee	> ff
	ff	8a27,28
	aaa	> eee
	bbb	> fff
	ccc	
	ddd	
	eee	
	fff	
	xxxx	
	yyyy	

Example 2 above shows Arrays 1 and 3, representing program elements from two source code files. Array 3 includes all lines from Array 1, as well as a number of additional lines. Arrays 1 and 3 were compared using the diff utility referenced in Arnow. Diff 1_3 shows the result of the comparison. In particular, the diff utility found a large number of non-matching lines, as indicated by “>” or “<” in Diff 1_3. Example 2 illustrates that the diff utility fails to identify plagiarism in arrays where one array constitutes a complete subset of another array, i.e., the problem addressed by the present invention.